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☐ 1: Yeast. 1992 Jul;8(7):535-47.

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Isolation of new temperature-sensitive mutants of *Saccharomyces cerevisiae* deficient in mannose outer chain elongation.

Nagasu T, Shimma Y, Nakanishi Y, Kuromitsu J, Iwama K, Nakayama K, Suzuki K, Jigami Y.

Tsukuba Research Laboratories, Eisai Co., Ltd., Ibaraki, Japan.

We have isolated two temperature-sensitive *Saccharomyces cerevisiae* mutants which exhibit a deficiency in mannose outer chain elongation of asparagine-linked oligosaccharide. The size of yeast glycoprotein, secretory form of invertase, of one mutant (och1) was slightly larger than that of the sec18 mutant at the non-permissive temperature, while that of the other mutant (och2) was almost the same as that of the sec18 mutant. Unlike sec mutants, the och mutants were not deficient in secretion of invertase. The och1 mutant showed a 2+:2- cosegregation with regard to the temperature sensitivity and mannose outer chain deficiency, suggesting that a single gene designated as OCH1 is responsible for these two phenotypes. The och1 mutant stopped its growth at the early stage of bud formation and rapidly lost its viability at the non-permissive temperature. The och1 mutation was mapped near the ole1 on the left arm of chromosome VII. The och1 mutant cells accumulated the external invertase containing a large amount of core-like oligosaccharides (Man9-10GlcNAc2) and a small amount of high mannose oligosaccharides (greater than Man50GlcNAc2) at the non-permissive temperature. Production of the active form of human tissue-type plasminogen activator was increased in the och1 mutant compared with the parental strain, suggesting the potential advantage of this mutant for the production of mammalian-type glycoproteins which lack mannose outer chains in yeast.

PMID: 1523886 [PubMed - indexed for MEDLINE]

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OCH1 encodes a novel membrane bound mannosyltransferase: outer chain elongation of asparagine-linked oligosaccharides[EMBO J. 1992]

Glycoprotein biosynthesis in *Saccharomyces cerevisiae*: ngd29, an N-glycosylation mutant allelic to och1 having a defect in the initiation of outer chain formation[FEBS Lett. 1995]

Glycoprotein biosynthesis in the alg3 *Saccharomyces cerevisiae* mutant. II. Structure of novel Man6-10GlcNAc2 processing intermediates on secreted invertase[Biol Chem. 1993]

Yeast mutants deficient in protein glycosylation[Proc Natl Acad Sci U S A. 1983]

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